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## *Small and Medium Enterprises (SME) Adjustments to Information Technology (IT) in Trade Facilitation: The South Korean Experience*

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## **Abstract**

This report examines how IT was incorporated into cargo clearance procedures in Korea, and what its implications are for traders, SMEs in particular. After a short introduction in Section I, Section II examines the definition of SMEs in Korea, and SMEs' role in Korean trade.

In Section III, we describe the history of the adoption of IT in Korean cargo clearance. The introduction of IT to cargo clearance procedures in Korea can be roughly divided into two stages. The first stage includes the implementation of: Preparation for Customs Clearance Automation (1980s-1992), EDI Customs Clearance Automation Six Year Plan (1992-1997), Establishment of Paperless Customs Clearance System (1997-2001); and the Plan for Establishment of Infrastructure for Information Technology and Knowledge Management (2001-2003). The main accomplishment of the first stage was a Value Added Network / Electronic Data Interchange (VAN/EDI) which linked KCS and traders in 1996. The system was subsequently expanded so that traders could access the system through the Internet..

The second stage begun in 2003, and has nearly reached completion in 2008. The goal of the second stage is to build an e-trade system where IT is used at every stage of trade, encompassing not only government-business (traders) transactions such as cargo clearance, but all trade-related transactions including business-business transactions as well. This second stage involves the establishment of an e-trade network and "uTradeHub," which ties not only government with traders, but other trade-related organizations and private agencies such as shippers, insurers, banks and financial institutions. These projects were carried out with considerations for SMEs in mind.

Section IV describes the results of the adoption of IT into cargo clearance. We find that IT has significantly lowered costs and sped up the cargo clearance process. Section V includes some case examples of individual firms which use the e-trade network for cargo clearance.

Lastly, section VI tries to draw some lessons for other countries which seek to adopt IT into cargo clearance. These lessons include:

- 1) *Adopting IT to cargo clearance must be a part of a comprehensive customs procedure reform.*
- 2) *Legal framework must accompany the adoption of IT and e-trade*
- 3) *Single network and single standard may be more useful than variety*
- 4) *Keep It Simple*
- 5) *The e-trade system and paperless trade system is meant to be used by the widest number of people.*
- 6) *Trust must be built between SMEs and government agencies.*
- 7) *Usefulness of e-trade will increase exponentially when more countries join.*

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## *Introduction*

International trade has been, and continues to be one of the most important factors in South Korea's growth and development. Trade has played a critical part in the development of its economy, and in recent years, Korea's trade volume (exports and imports) reached more than 80% of its GDP. Because of the importance of trade, Korea has always been interested in ways to make trade easier and faster.

Korea was one of the first countries to utilize information technology (IT) for trade procedures. By the late 1990s, Korea was one of the most "wired" countries in the world.<sup>1</sup> Given the rapid pace of IT adoption, it made sense for Korea to utilize IT for customs procedure and trade facilitation. The Korean government vigorously pursued extensive use of IT for cargo clearance in order to reduce transaction costs and regulatory burden for traders, especially small and medium sized enterprises (SMEs), since these costs tend to affect SMEs more than large businesses.

In this paper, we examine the evolution of the use of IT for cargo clearance in Korea, and how it affected businesses, especially SMEs. We want to emphasize that the adoption of IT for cargo clearance involved not only installing new hardware and software, replacing paper forms with electronic forms, but also required an extensive revision of laws and regulations to maximize effectiveness. In section II, we examine SMEs, and their role in Korean trade. In section III, we examine how the Korean government adopted IT into its trade and customs procedures. In Section IV, we examine how these changes affected SMEs in general, and in section V, we look at some specific case examples. In section VI, we develop some conclusions, and make some recommendations based on the Korean experience.

### *South Korean SMEs, Trade, and Trade Facilitation*

In this section, we examine what constitutes a SME in Korea, and the role of SMEs in trade. As seen in Table 1, for the manufacturing sector, the Korean legislation defines SME as a firm with less than 300 full-time employees or equivalent, or a firm with capital of less than 8 billion won<sup>2</sup>. For mining, manufacturing, construction and transportation industries, a small business is a firm with less than 50 full time employees or equivalent, and a micro-enterprise is a firm with less than 10 full time employees or equivalent.

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<sup>1</sup> : According to UNCTAD e-business database (2006), in 2004, 94.0% of all Korean businesses had access to the Internet, and 92.2% of all Korean businesses were able to access the Internet through fixed line connections of 2 Mbps or higher

<sup>2</sup> : Approximately 8 million US dollars in 2008.

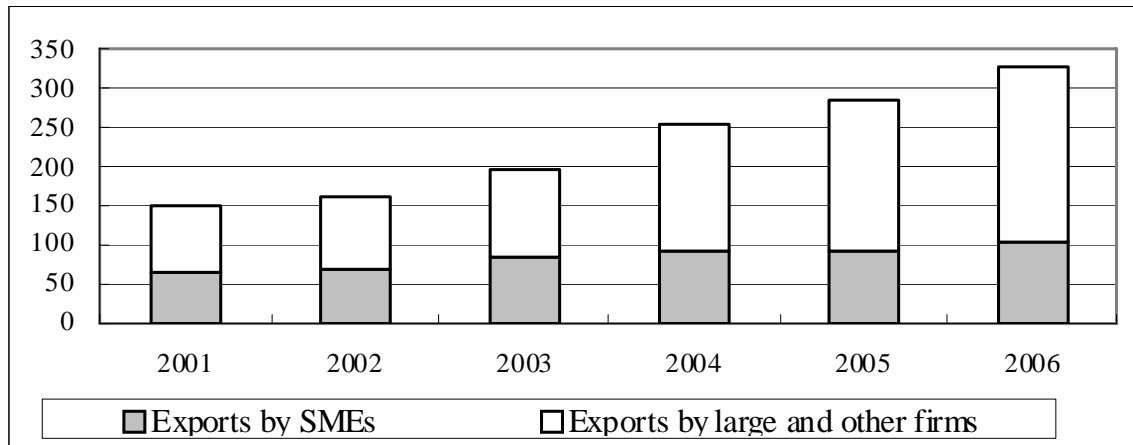
**Table 1: Legal Definitions of SMEs in South Korea**

Sector	SMEs		Small Business	Micro-enterprises
	No of Workers	Capital & Sales	No. of Workers	
Manufacturing	Less than 300	Capital of 8 billion won or less	Less than 50	Less than 10
Mining, construction and transportation	Less than 300	Capital of 3 billion won or less	Less than 50	Less than 10
Large general retail stores, hotel, recreational condominium operation, communications, information processing and other computer-related industries, engineering service, hospital and broadcasting	Less than 300	Sales of 30 billion won or less	Less than 10	Less than 5
Seed and seedling production, fishing, electrical, gas and waterworks, medical and orthopaedic products, wholesales, fuel and related products wholesales, mail order sale, door-to-door sale, tour agency, warehouses and transportation-related service, professional, science and technology service, business support service, movie, amusement and them park operation	Less than 200	Sales of 20 billion won or less	Less than 10	Less than 5
Wholesale and product intermediation, machinery equipment rent for industrial use, R&D for natural science, public performance, news provision, botanical garden, zoo and natural parks, waste water treatment, waste disposal and cleaning related service	Less than 100	Sales of 10 billion won or less	Less than 10	Less than 5
Other sectors	Less than 50	Sales of 5 billion won or less	Less than 10	Less than 5

Source: Small and Medium Business Administration (Korea) website [http://www.smba.go.kr/main/english/sub3/sub03\\_1.jsp](http://www.smba.go.kr/main/english/sub3/sub03_1.jsp)

In 2006, there were approximately 3 million SMEs in South Korea (99.9% of the total number of firms), employing 10.9 million workers (87.5% of the total). However, the SMEs tend to under-perform in trade. SMEs only accounted for 31.9% of total Korean exports. Graph 1 shows recent trends in Korean SME exports, and Table 2 shows the recent share of SMEs in Korean exports.

**Graph 1: Recent Trends in Korean SME Exports (USD billions)**



Source: Korea Federation of Small Business webpage:  
[http://stat.kfsb.or.kr/stat\\_index.html](http://stat.kfsb.or.kr/stat_index.html)

**Table 2: Percentage of SME Exports in Total Korean Exports**

2001	2002	2003	2004	2005	2006
43	42	42	36	32	32

Source: Korea Federation of Small Business webpage:  
[http://stat.kfsb.or.kr/stat\\_index.html](http://stat.kfsb.or.kr/stat_index.html)

The type of goods Korean SMEs export is substantially different from those exported by large enterprises. Table 3 shows the breakdown of exports for SME exports, and the last row of Table 3 shows the breakdown for large enterprises in the first quarter of 2007. As seen, the exports of SME and large enterprises are heavily concentrated in machinery and electronics, but SMEs tend to export more chemicals, plastics and rubber products, as well as steel and metal products, which tend to be less processed. The differences in percentages probably represent the lower technology base of SMEs.

**Table 3: Percentage of Exports for SMEs**

	Agriculture	Chemicals	Plastics Rubber	Fiber	Steel / Metal	Machinery	Electric/ Electronic
2001	3.5	8.2	5.3	20.4	5.2	20.2	31.2
2003	5.2	11.6	4.1	15.8	8.6	16.8	33.4
2005	3.9	13	5	13.7	9.1	20.1	31.2
2007 1/4	3.4	13.4	4.4	9.8	10.4	21.7	34.1
2007 1/4 (Large Enterprises)	8.2	9.7	1.4	0.6	8.4	34.3	37.3

Source Korea Federation of Small Business webpage:  
[http://stat.kfsb.or.kr/stat\\_index.html](http://stat.kfsb.or.kr/stat_index.html)

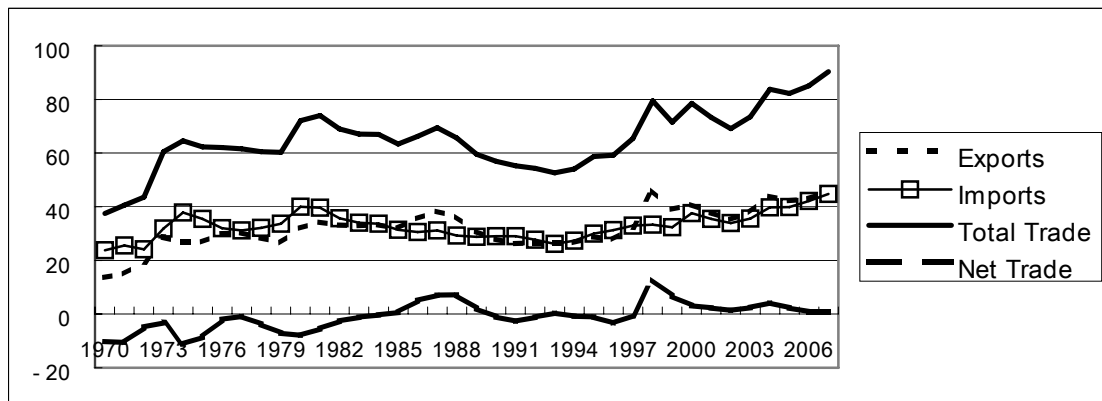
### III. Evolution in the Use of IT for Cargo Clearance

### Background

For Korea, the adoption of IT in cargo clearance has been an important part of Korea's overall e-trade project, which in turn is a crucial component of Korea's overall trade facilitation initiative. It is important to note that the introduction of e-trade was a part of an overall long-term reform of trade procedures. While the introduction of IT may have been the largest component of the reform process, without reforms in these other areas, it is likely that much of the gains in efficiency would not have been realized.

Korea had been emphasizing trade facilitation and reforms of customs clearance since the late 1980s for several reasons. First, trade had always played an important part in Korean development. As seen in Graph 2, since mid-1970s, combined trade volume (exports and imports) was consistently greater than 50% of the GDP. Further, because Korea was a resource-poor country, and until arguably mid 1990s, also a low-technology country, it needed to import raw material and other inputs from abroad. Thus, better customs clearance could reduce costs of producers and exporters. Also, after a six-year period of trade surpluses in the mid 1980s, Korea experienced trade deficits from 1990, due in large part to the slowing growth of exports, coupled with rapid rise in imports. Thus, emphasis was placed on streamlining and reducing costs.

**Graph 2: Trade as a Percentage of GDP in Korea**



Data KOSIS Database of the National Statistics Office (<http://www.kosis.kr>)

Another factor may have been the bad reputation of the Korea Customs Service (KCS) during much of the time the reforms took place. As KCS itself has admitted in a 2004 report to the President, KCS was often placed on the list of most corrupt and unfriendly government agency up to early 2000s<sup>3</sup>. Also, the logistics related costs were deemed to be higher than Korea's international competitors due to inefficient laws and regulations, as well as corruption. Such perception gave Korea the incentive to try to overhaul the system.

<sup>3</sup> : KCS (2004) p.5. However, due in large part to the reforms described in this paper, KCS is now consistently rated as one of the more efficient and less corrupt government agencies. KCS itself seems to admit that the low rating served as one of the incentives for reforms, and is deservedly quite proud that KCS is now considered one of the least problematic government agencies.

Korea completed a major reform of the import clearance system in 1996. The most important consequence of that reform was that Korea moved from a permit system to a self-declaration system, and KCS moved toward post-entry investigation for cargo clearance. Focus was placed on de-regulation and facilitation of customs clearance. During these reforms, the pre-clearance payment of duty was replaced by post-clearance payment system as well. Korea introduced the on-dock immediate delivery system in 1998, which allowed an importer to unload and release imported goods simultaneously at the time of entry<sup>4</sup>. Such reforms accelerated the customs clearance procedures considerably, and set the stage for e-customs and e-trade.

#### *Introduction of E-Trade*

The use of IT for cargo clearance is only a part of the e-trade process. Korea defines e-trade as “wide-ranging trade activities, which use electronic means for customs clearance, financial payments, transportation and insurance; and encompasses not only traders but also third parties such as government, transportation firms and financial institutions.<sup>5</sup>” Korean trade law recognizes e-trade as “trade whose transactions take place wholly or partially through information processing equipment such as computers, and electronic information network.<sup>6</sup>” Korea placed importance on using IT for customs clearance because in the late 1980s and early 1990s, Korea began to emerge as a major producer for IT related goods, and the Korean society began to get “wired.” In the late 1990s, the Korean government began its initiative to establish an “e-government” where agencies would adopt and use IT wherever possible. Customs clearance was a natural candidate for such e-government initiatives.

Korea has been pursuing e-trade since the late 1980s. In 1989, the Korean government initiated the “Comprehensive Trade Automation Plan,” and in 1991, Korea passed the “Act on Trade Automation.” The Act gave legal basis for the use of IT in cargo clearance as well as automation of the cargo clearance process. In the same year, the Ministry of Trade and Commerce (currently Ministry of Knowledge Economy) signed an “Agreement on Trade Automation” with the Korean Customs Service (KCS). In 1991, Korea International Trade Association (KITA), a private organization composed of traders, which often act as an intermediary between traders and the government, funded the establishment of the Korea Trade Network (KTNET), which was to build and operate e-trade infrastructure and e-trade services. In the same year, KCS designated KTNET as sole Trade Automation Service Provider. Since then

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